

What is Claimed is:

1. An optical pickup head which makes a fine movement by a driver, and focuses an incident laser beam to a recording medium for recording/reproducing a data, the optical pickup head comprising:

a micro mirror having at least one 45° mirror surface for reflecting the incident laser beam perpendicular to an incident direction;

a focusing lens under the micro mirror for primary focusing of the laser beam reflected at the micro mirror; and,

an SIL (Solid Immersion Lens) under the focusing lens for secondary focusing of the laser beam focused primarily.

2. An optical pickup head as claimed in claim 1, wherein the 45° mirror surface of the micro mirror has a highly reflective metal coating applied thereto.

3. An optical pickup head as claimed in claim 1, wherein the micro mirror is formed of a silicon substrate.

4. An optical pickup head as claimed in claim 3, wherein the silicon substrate is a 9.74° off-axis (100) silicon wafer.

5. An optical pickup head as claimed in claim 1, wherein the 45° mirror surface of the micro-mirror is formed by anisotropic etching by using one etchant selected from KOH, EDP, TMAH.

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6. An optical pickup head as claimed in claim 1, wherein the 45° mirror surface of the micro-mirror, a focus plane of the focusing lens, and a focus plane of the SIL are aligned in parallel.

Sub A27 7. An optical pickup head which makes a fine movement by a driver, and focuses an incident laser beam to a recording medium for recording/reproducing a data, the optical pickup head comprising:

a micro mirror having at least one 45° mirror surface for reflecting the incident laser beam perpendicular to an incident direction;

a focusing lens under the micro mirror for primary focusing of the laser beam reflected at the micro mirror;

a first supporting frame fitted under the micro-mirror for supporting the focusing lens;

an SIL (Solid Immersion Lens) under the focusing lens for secondary focusing of the laser beam focused primarily; and,

a second supporting frame fitted under the first supporting frame for supporting the SIL.

8. An optical pickup head as claimed in claim 7, wherein the 45° mirror surface of the micro mirror has a highly reflective metal coating applied thereto.

9. An optical pickup head as claimed in claim 7, wherein the micro mirror is formed of a silicon substrate.

10. An optical pickup head as claimed in claim 9, wherein the silicon substrate is a 9.74° off-axis (100) silicon wafer.

11. An optical pickup head as claimed in claim 7, wherein the 45° mirror surface of the micro-mirror is formed by anisotropic etching by using one etchant selected from KOH, EDP, TMAH.

12. An optical pickup head as claimed in claim 7, wherein the 45° mirror surface of the micro-mirror, a focus plane of the focusing lens, and a focus plane of the SIL are aligned in parallel.

13. An optical pickup head which makes a fine movement by a driver, and focuses an incident laser beam to a recording medium for recording/reproducing a data, the optical pickup head comprising:

a micro mirror having at least one 45° mirror surface for reflecting the incident laser beam perpendicular to an incident direction;

a focusing lens under the micro mirror for primary focusing of the laser beam reflected at the micro mirror;

a first supporting frame fitted under the micro-mirror having an opening in a region for supporting the focusing lens;

an SIL (Solid Immersion Lens) under the focusing lens for secondary focusing of the laser beam focused primarily;

a second supporting frame fitted under the first supporting frame having an opening in a region for supporting the SIL; and,

an air-bearing surface formed under the second supporting frame for making the second supporting frame buoyant.

14. An optical pickup head as claimed in claim 13, wherein the 45° mirror surface of the micro mirror has a highly reflective metal coating applied thereto.

15. An optical pickup head as claimed in claim 13, wherein the micro mirror is formed of a silicon substrate.

16. An optical pickup head as claimed in claim 15, wherein the silicon substrate is a 9.74° off-axis (100) silicon wafer.

17. An optical pickup head as claimed in claim 13, wherein the 45° mirror surface of the micro-mirror is formed by anisotropic etching by using one etchant selected from KOH, EDP, TMAH.

18. An optical pickup head as claimed in claim 13, wherein the 45° mirror surface of the micro-mirror, a focus plane of the focusing lens, and a focus plane of the SIL are aligned in parallel.

19. An optical pickup head as claimed in claim 13, wherein the opening has a side surface sloped at a fixed angle such that an upper width thereof is greater than a lower width thereof.

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20. An optical pickup head as claimed in claim 13, wherein the SIL is fitted in the opening of the second supporting frame.

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